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March 5, 2004
Secretary, Federal Communications Commission
445 12th Street, SW
Washington, DC. 20554

References

(a): Your Public Notice, **WT DOCKET# 01-309**
DA 04-567 of February 26, 2004
(b) Your Report and Order of August 14, 2003

Attachments: Tabs A – L.

Dear Federal Communications Commission:

In response to your Public Notice, Reference (a,) we hereby submit the following comments on petitions for reconsideration of the Hearing Aid Compatible Telephones Report And Order, Reference (b).

We believe that this Report and Order should be reconsidered because the technology to harden the hearing aids already exists.

QUALIFICATIONS:

We, Louis T. Gnecco and Paula S. Gnecco, are both electronics engineers currently working in both Electromagnetic Compatibility and Hearing Aid technology. We are qualified to provide this information because we have significant expertise in both technologies. We have performed a significant amount of independent research in our FCC-listed laboratory investigating these issues. We have no affiliation with the cellular telephone industry. We are submitting our professional opinions and the following facts independently.

We are the owners of TEMPEST INC., a custom manufacturer of secure communications devices, and an FCC-listed Electromagnetic Compatibility testing laboratory. TEMPEST INC has been in business for more than nineteen years. Its products have been personally used by the Secretary of Defense and by the President of the United States.

We are also Hearing Instrument Specialists licensed by the Commonwealth of Virginia. We own BETTER HEARING INC., a Virginia Corporation that dispenses hearing aids, that has been in business for twelve years.

Louis T. Gnecco has a Masters Degree in Electrical Engineering, more than 30 years of experience in electromagnetic compatibility. He is a certified Electromagnetic Compatibility Engineer, and the author of three textbooks on Electromagnetic Compatibility. He is also a Licensed Hearing Instrument Specialist. He holds five Federal Communications Commission licenses. **TAB A** provides some of his other qualifications.

We are the owners of the following patents that pertain to this issue:

PATENTS:

5,640,457: "Electromagnetically Shielded Hearing Aid" 1997 (**TAB B**)
6,031,923: "Electromagnetically Shielded Hearing Aid" 2000 (**TAB B**)
6,546,109: "Electromagnetically Shielded Hearing Aid" 2003 (**TAB B**)

BACKGROUND:

In 1995, using the combined resources of TEMPEST INC. and BETTER HEARING INC., we solved the difficult electromagnetic compatibility problems that made it impossible for most hearing aid wearers to use cell phones.

We were awarded three patents and were granted approval by Food and Drug Administration to market two types of these aids as cell phone compatible. We demonstrated our new cell-phone compatible hearing aids widely (**TAB C**) and advertised them for a year. We were the subjects of articles in the Washington Post (**TAB D**) and in hearing industry publications (**TAB E.**)

At about that time, a small group of European hearing aid manufacturers who dominate the American hearing aid business banded together to form the "Hearing Instrument Manufacturers Patent Partnership" (HIMPP,) see **TAB F**.

In January of 2000, we were notified that HIMPP asked the patent office to Re-Examine one of our patents, in an effort to invalidate them all:

Re-examination:
5,640,457, Reexam. S.N. 90/005,608, Jan. 7, 2000, Cl. 381/322, ELECTROMAGNETICALLY SHIELDED HEARING AID, Louis Thomas Gnecco, et. al.,Owner of Record: Louis Thomas Gnecco and Paula Sharyn Gnecco, Herndon, VA, Attorney or Agent: None, Ex. Gp.: 2743, Requester: K/S HIMPP, NY, Vaerloese, Denmark; c/o David J. Cushing, Sughrue Mion Zinn Mac Peak and Seas, Washington, DC

In August 2003, after a 3 ½ year legal battle, we prevailed. Our patent was upheld with no changes **(TAB G)**. Our attorney was Jim Gatto of Mintz, Levin in Reston, Virginia.

COMMENTS:

An FDA-approved solution has been available since 1997. Our work was well known within the industry; we sought to become part of this industry and to provide consumers with an option.

In 1997 we also developed the industry's first test procedure to determine the compatibility between hearing aids and cellular phones. This involves a set of simple but rigorous tests that any hearing aid dispenser with normal hearing can perform in his or her office. This procedure is simple, rigorous, and reliable. We submitted this procedure, along with its Rationale to the Food and Drug Administration, in 1997. They were never challenged. We offered copies of this procedure, at $100 per copy, to the ANSI C63.19 committee. We sold one copy.

In 1997 we also contacted the presidents of the major cell phone companies, offering to test their cell phones against our hearing aids at no charge. Several companies provided phones. We furnished these reports to the Food and Drug Administration and to the cell phone manufacturers involved. **TAB H** contains the list of reports. None of these reports have ever been challenged.

Because the Food and Drug Administration had previously (mid 1990's) censured the hearing aid industry for making unfounded marketing claims. They then began to require substantiation before approving such marketing claims. Before advertising our devices, we successfully substantiated our claims before an FDA-assembled committee of experts (**TAB I**).

Our test procedure was accepted by the FDA and we were granted permission to market two models of hearing aids as cell-phone compatible. **TAB J** contains the exact language.

Our original intent was to manufacture and market cell-phone compatible hearing aids to meet the needs of the hearing impaired, creating good, high-tech jobs in the United States. In 2000, with our patents under the cloud of re-examination, it was impossible to continue.

In July 2002, we contacted every major hearing aid manufacturer by certified letters and offered licensing agreements. A typical letter is shown in **TAB K**. Most firms did not even give us the courtesy of a reply. Four firms stated that they had "no need" of this technology (**TAB L**) while simultaneously trying to invalidate the patents that protect it.

TECHNICAL ISSUES:

ANSI C63.19

It is our professional opinion that the ANSI C63.19 test procedure is still flawed for the following reasons:

1. Cell phone interference causes more than just the "perceived noise" that the ANSI procedure addresses. We have found that it can also saturate circuitry, causing quieting. It can disable amplification in ways that are undetectable by the user. This is a much more serious problem. The versions of C63.19 that we have seen do not address it.

2. In our own laboratory tests, we have also seen strong indications that the frequency response and other important hearing aid features are also affected. A trained hearing aid dispenser can hear these effects using a hearing aid stethoscope: a simple, $10.00 tool found in every hearing aid office.

Today's hearing aids are no longer just amplifiers. They contain sophisticated control circuitry that makes them even more susceptible to many different, subtle forms of cell-phone interference.

3. The ANSI standard allows several levels of noise (U1, U2, U3) to remain present in a hearing aid. This is unrealistic. The hearing impaired have to struggle for intelligibility even under the best of circumstances. The ANSI approach adds an extra burden that they will find unacceptable.

4. In our professional opinion the ANSI specification is also unnecessarily complex, with many loopholes. It requires expensive, unusual test equipment that is beyond the reach of hearing aid dispensers. This prevents independent verification by the dispenser at the time of sale or during office adjustments.

In this, as in any other any field, complicated test procedures open the door to deliberate fraud and to honest mistakes. Both are undesirable outcomes.

SOLUTION

It is our professional opinion that this problem must be solved by hardening the hearing aid, just as pacemakers are hardened against electromagnetic interference. Clearly, we would like to see our technology used.

Modifying the cell phones is not practical. It will impede development of the improved service that cell phone users are demanding.

Modifying cell phones does nothing to address the hearing aid interference that is also produced by fluorescent lights, computers, Personal Digital Assistants, alarm systems, wireless internet services, wireless computer peripherals, wireless anti-shoplifting systems, automated toll booths ("speedpass") and the many other devices that are constantly being developed in this, the wireless age.

Hardening the hearing aids will allow them to function effectively with most wireless products. It is a robust, proven, and available approach that is used in pacemakers and in many other devices.

SUMMARY:

Hearing impaired people have been waiting for a solution for over sixteen years (since the Hearing Aid Compatibility Act of 1988.) The solution has existed for seven years. Cellular phones are not just a convenience. They can be life-saving devices. Hearing impaired people need them and have a right to equal access.

We have several clients who have actually lost their hearing aids after removing them to use a cellular phone. This is costly, frustrating, and it can be dangerous.

Hearing aids are currently a 1.9 Billion dollar per year industry in the United States, but the manufacturers seem to have little inclination to change their products. Just as with automobile seat belts, this solution will require some government intervention.

CONCLUSIONS:

- It is impractical to modify cell phones and all other wireless devices so as not to interfere with hearing aids.
- The ANSI C63.19 test procedure is still flawed. A simple, rigorous, and proven test procedure has been available for several years.
- A technical solution to the hearing aid-cell phone compatibility problem has existed since 1997.
- The major foreign-owned hearing aid manufacturers have deliberately ignored, or claimed to have "no need" for this technology, while simultaneously trying to invalidate the patents that protect it.
- There appears to be little interest among these manufacturers to make the needed changes without an FCC mandate.

Please take this information into consideration when making this decision, which is so important to the hearing-impaired citizens of the United States. With the aging of the baby-boomers their numbers will grow, as will the need for a reliable, practical resolution to the problem.

We appreciate this opportunity to provide our comments for your consideration. We will be happy to answer questions and submit additional information if necessary.

Very truly yours,

Paula S. Gnecco, M.A.,
President, BETTER HEARING, INC.

Louis T. Gnecco, M.S.E.E.,
President, TEMPEST INC.

TAB A

QUALIFICATIONS OF LOUIS T. GNECCO (PARTIAL LIST)

EDUCATION:
Master of Science in Electrical Engineering (Communication Theory)
George Washington University, Washington DC 1980
Bachelor of Engineering, Electrical Engineering:
Manhattan College, Bronx NY 10471 Sept. 1, 1966

AUTHOR OF THE FOLLOWING BOOKS:
1) "The Design of Shielded Enclosures"
Cost Effective Methods to Prevent Electromagnetic Interference.
Butterworth-Heinemann Publishing Company. August 2000. ISBN 0-7506-7270-6

2) " The Shielded Enclosure Handbook"
The Definitive Guide for the Buyer Builder, Tester and User of Electromagnetically Shielded Rooms. TEMPEST INC.: 1999 ISBN 0-9706415-2-4

3) " Problems and Solutions in Electromagnetic Compatibility and Wireless Communications"
How To Make Fast, Accurate R.F. Computations Without a Calculator. TEMPEST INC. 1999 ISBN O-9706415-1-6

LICENSES AND CERTIFICATIONS:
1) Certified Electromagnetic Compatibility Engineer Cert. # EMC-000544-NE
2) Certified Electrostatic Discharge Control Engineer Cert. # ESD-00143-NE
3) Licensed Hearing Instrument Specialist: Virginia License # 2101-000719

4) FCC General Radiotelephone Operator's License, with Ship Radar Endorsement
5) FCC Global Maritime Distress and Signaling System Operator's License.
6) FCC Global Maritime Distress and Signaling System Maintainer's License.
7) FCC Second Class Radiotelegraph Operator's License
8) FCC Amateur Radio Extra Class (highest level) License: KG4PXE